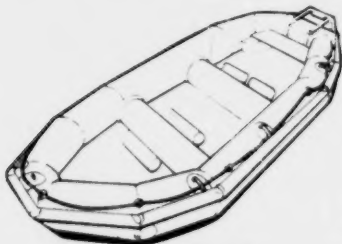


5-1940-272-10

* TM 5-1940-272-10

OPERATOR'S MANUAL



7 PERSON CO₂ INFLATABLE LANDING BOAT

NSN 1940-00-294-2300

Approved for public release.
Distribution is unlimited.

*This manual supersedes TM 5-1940-272-10, dated
1 April 1986.

HEADQUARTERS, DEPARTMENT OF THE ARMY

8 APRIL 1988

D101-11:



WARNING

Dry cleaning solvent, P-D-680, used to clean parts, may cause danger to persons and property. Do not allow the solvent to touch the skin over long periods of time. Do not use near open flame or heat. Flash point of solvent is 100°F - 138°F (38°C-59°C).

Make certain the cylinders are completely empty before attempting disassembly.

All crewmen must wear life preservers during boat operation.

When inflating the boat with CO₂ Cylinder stand back from the boat.

a/(b blank)

TECHNICAL MANUAL

No. 5-1940-272-10

**HEADQUARTERS
DEPARTMENT
OF THE ARMY
WASHINGTON, DC**

8 April 1988

**Operator's Manual
7-PERSON CO₂ INFLATABLE
LANDING BOAT
NSN 1940-00-294-2300**

Approved for public release;
distribution unlimited.

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know a way to improve the procedures please let us know. Mail your letter or DA Form 2028 directly to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

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*This manual supersedes TM 5-1940-272-10,
1 April 1986.

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CHAPTER 1

INTRODUCTION

Section I GENERAL INFORMATION

The 7-person CO₂ inflatable landing boat is used by assault troops to cross water barriers. (See Chapter 2 for detailed list of components.)

Scope

Type of Manual: Operation and Maintenance

Model Number and Equipment Name

7-Person CO₂ Inflatable Landing Boat

Maintenance Forms and Records

Maintenance forms, records, and reports required are listed below. All forms are listed in Appendix A. Department of the Army forms and procedures for equipment maintenance will be in the DA PAM 738-750, The Army Maintenance Management System (TAMMS).

Equipment Inspection and Maintenance

Worksheet	DA Form 2404
-----------	--------------

Maintenance Request for Requesting Support

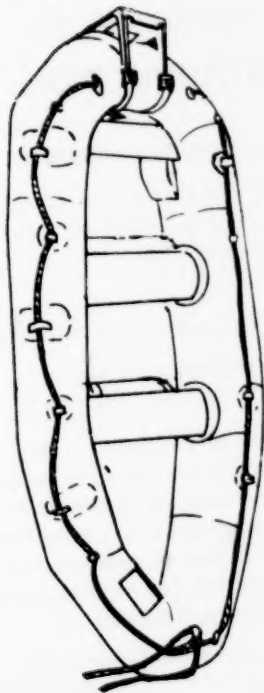
Maintenance	DA Form 2407
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Maintenance Request Continuation

Sheet	DA Form 2407-1
-------	----------------

Recommended Change to DA Publications

	DA Form 2028
--	--------------



7 - Person CO₂ inflatable landing boat

Hand Receipt (-HR) Manuals

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 5-1940-272-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in Chapter 3, AR 310-2.

US Army Adjutant General Publications
Center
2800 Eastern Blvd.
Baltimore, MD 21220-2896

Reporting Equipment Improvement Recommendations (EIR).

If your 7-person inflatable landing boat needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on a SF 368 (Quality Deficiency Report). Mail it to us at: Commander, US Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. We'll send you a reply.

Section II

EQUIPMENT DESCRIPTION

Purpose of the Seven-Person CO₂ Inflatable Landing Boat

An inflatable landing boat intended to carry crew and equipment across streams or other bodies of water.

Capabilities and Features

Portable

Inflatable, both by CO₂ cylinder and by air pumps.

All weather operational

May be used for general work in bridge building, river crossings, measuring streams, inspecting bank conditions; clandestine operations; infiltration of ranger or guerilla type personnel into enemy territory, etc.

Boat Weights and Dimensions

Inflated

Length

12 feet (3.6m)

Width

6 feet (1.8m)

Rolled Dimensions 61 in x 16½ in x 24 in
(155cm x 42cm x 61cm)

Capacity (7 crew members
and equipment) 1575 lbs (714.4kg)

Inflation Pressure 3 psi (211 g/sqcm)

CO₂ Cylinder Dimensions

Volume 205 cu. in (3360 ccm)

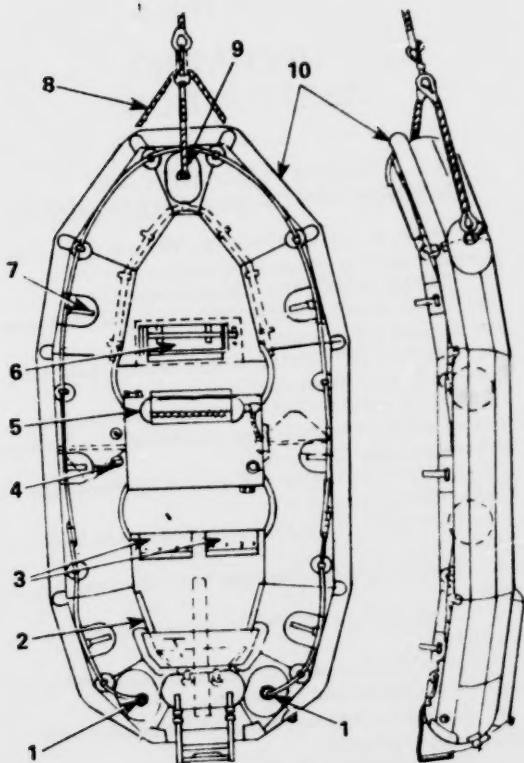
CO₂ Weight 4.9 lbs (2.2kg)

CHAPTER 2

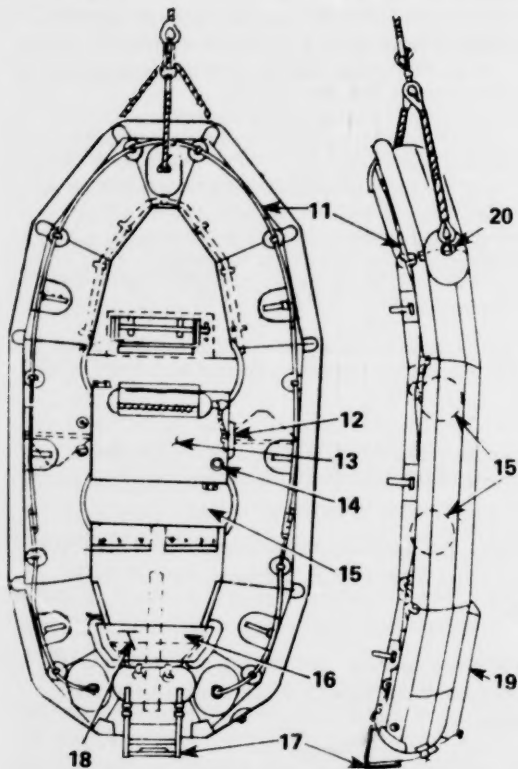
OPERATING INSTRUCTIONS

Section I LOCATION AND DESCRIPTION OF BOAT COMPONENTS

1. 1 3/4 IN. (4.7cm) DEE RING (2)—Fitted at back of boat for attachment of towing gear (as needed).
2. REPAIR KIT POCKET—Contains repair kit.
3. SMALL HAND PUMP POCKET—Holds 2 small hand pumps, hoses and adapters.
4. BOAT INFLATION/DEFLATION VALVE—Used to inflate/deflate boat using hand pumps.
5. CO₂ CYLINDER—205 cu. in. (3360 ccm) capacity, charged with 4.9 pounds (2.2 kg) of carbon dioxide. Inflates boat to about 3 psi (211 g/sqcm).
6. LARGE HAND PUMP — Foot held, hand operated. Used to inflate or deflate boat.
7. CARRYING HANDLES—Six handles, three on each side.
8. TOWING BRIDLE—Attached by shackles and Dee rings.
9. 1 1/4 IN. (3.2 cm) DEE RING—Attached to line and towing hook.
10. SPRAY TUBE—Made of neoprene coated cloth and attached around the boat near the top.
11. LIFE LINE—Attached along outside top of the boat for emergency purposes.
12. CO₂ MANIFOLD—Used as an attachment point for CO₂ outlet hose.
13. INFLATABLE FLOOR—Made of neoprene coated cloth, with an inflation/deflation valve.



7 - Person CO₂ inflatable landing boat



7 - Person CO₂ inflatable landing boat

- for inflation/deflation of the floor using manual pump.
15. **INFLATABLE SEAT TUBES**—Two cross tubes give side support to boat and used as seats.
 16. **FLAP SEAT**—Seat at back of the boat.
 17. **MOTOR MOUNT**—Used as an attachment point for the outboard motor.
 18. **SUPPLY POCKET**—Area to stow supply items.
 19. **SKEG TUBE**—Made of neoprene coated cloth attached to bottom of boat at the back. It has an inflation/deflation valve for manual inflation/deflation.
 20. **1¾ IN. (4.7 cm) DEE RING (2)**—Used to attach extra tow/mooring lines.

NOTE: The motor mount is used only if an outboard motor is used. The motor is considered optional equipment.

Section II PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Before you operate, always keep in mind the **CAUTIONS** and **WARNINGS**. Perform your before (B) **PMCS**.

While you operate, always keep in mind the **CAUTIONS** and **WARNINGS**. Perform your before (D) **PMCS**.

After you operate, be sure to perform your after (A) **PMCS**.

Every week, perform your weekly (W) **PMCS**.

to keep it in good operating condition.

For unit readiness reporting purposes, perform your combat operability (C) PMCS.

If your equipment fails to operate, troubleshoot with proper equipment. Report any deficiencies using the proper forms. See DA PAM 738-750.

PMCS Table

The PMCS table (Table 2-1) lists and describes preventive maintenance steps to follow. All problems will be recorded, together with the corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible time.

The PMCS table is arranged so you can make before-operation (B) checks as you walk around the landing boat.

Preventive Maintenance is planned as a one-man job. If you have a helper, put him to work too. Remember that, no matter who does the job, doing it right is your responsibility.

Table 2-1 Preventive Maintenance Checks and Services

NOTE: Within designated intervals, these checks shall be performed as listed.

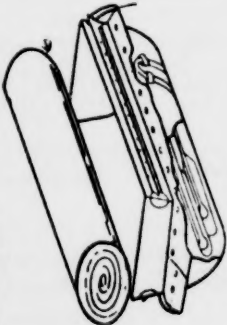
Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/ available if:
	B	D	A W			
1				Boat	 Remove the boat from the carrying case.	

Table 2-1 Preventive Maintenance Checks and Services - Continued

B - Before
D - During
A - After
W - Weekly

Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/available if:
	B	D	A/W			
1				Boat	 Unroll the boat on a flat surface. Make sure no sharp items are under it.	

Table 2-1 Preventive Maintenance Checks and Services - Continued

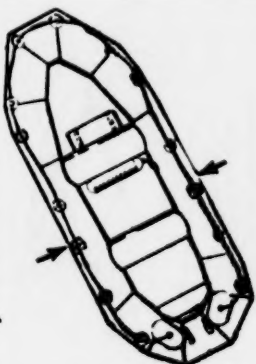
Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/available if:
	B	D	A W			
1		•	•	Boat	 Unfold the 2 sides. Inspect boat for any damage that could cause leakage.	Cuts, tears or holes are present in fabric.

Table 2-1 Preventive Maintenance Checks and Services - Continued

B - Before
D - During

A - After
W - Weekly

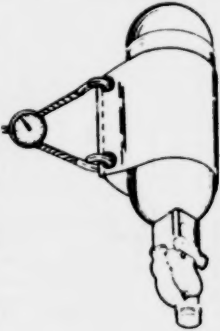
Item No.	Interval		Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/available if:
	B	D A W			
2		•	Cylinders	 Weigh CO₂ cylinders to check for correct pressure. Weight is stamped on cylinder. If charge has decreased 1½ oz. (42 grams) or more, additional CO₂ should be added to correct pressure.	CO ₂ cylinders are not fully charged.

Table 2-1 Preventive Maintenance Checks and Services - Continued

B - Before
D - During
A - After
W - Weekly

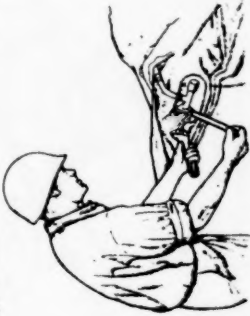
Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/available if:
	B	D	A W			
3				Manifold	 Blow air through manifold (13) to make sure air can pass through each inlet and into each compartment. Any air passages are blocked	

Table 2-1 Preventive Maintenance Checks and Services - Continued

B - Before
D - During
A - After
W - Weekly

Item No.	Interval		Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/ available if:
	B	D A W			
4	•	•	Paddles	 Inspect paddles for damage.	Any paddles are broken, chipped or cracked. Lamination is separated.

Table 2-1 Preventive Maintenance Checks and Services - Continued

B - Before
D - During
A - After
W - Weekly

Item No.	Interval			Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/available if:
	B	D	A W			
5					 Check repair kit to make sure all items are included.	Any items are missing.

Table 2-1 Preventive Maintenance Checks and Services - Continued

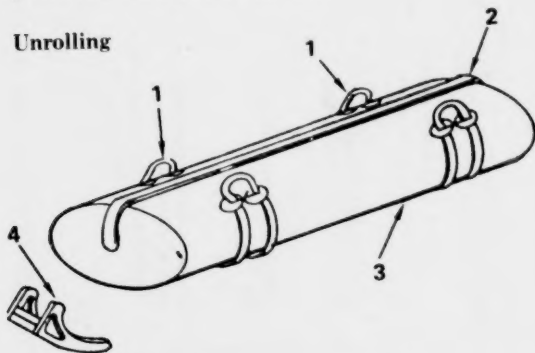
Item No.	B - Before D - During		Item to be Inspected	A - After W - Weekly		Equipment is not ready/ available if:
	Interval			Procedures		
	B	D	A	W		
6		•			Check for and have repaired or adjusted as necessary	Any items are missing
7		•			Check supply pocket to make sure all items are included.	Pump fails to inflate/deflate boat.
8		•			Check for proper operation (pg 3-5)	Pump fails to inflate/deflate boat.
					Check for proper operation (pg 3-8)	

Section III OPERATION UNDER USUAL CONDITIONS

Putting Boat into Service

WARNING: All crew members must wear life preservers during boat operation.

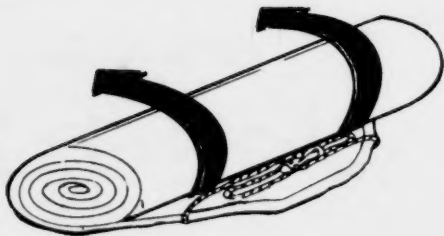
Unrolling



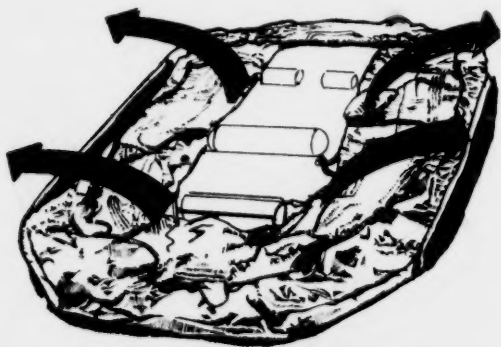
- 1 Carrying Handles
- 2 Sealing pattern,
folded and snaps
secured

- 3 Body
- 4 Motor Mount

Remove boat from carrying case in accordance with instructions printed below the roll-down flap of the carrying case.

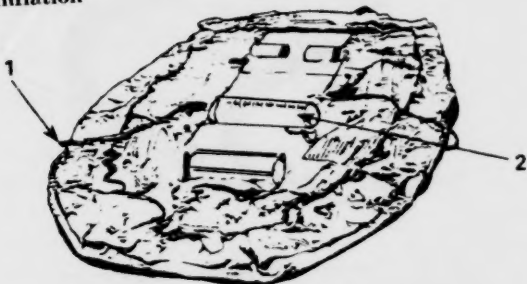


Unroll boat. Care should be taken not to discharge the CO₂ cylinder.



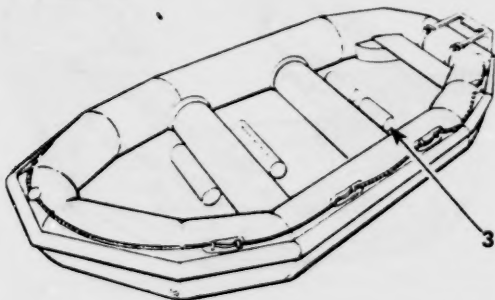
Unfold the 2 sides.

Inflation



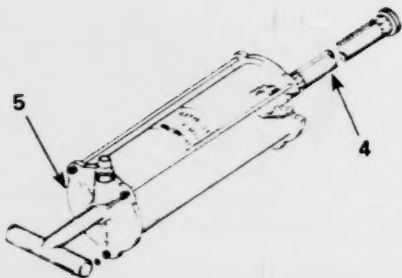
CAUTION: Stand clear of the boat while it is inflating.

Inflate the boat by pulling the pull cable (1) on the CO₂ cylinder (2).

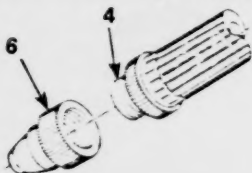


If additional pressure is needed, use the hand pump in the following steps:

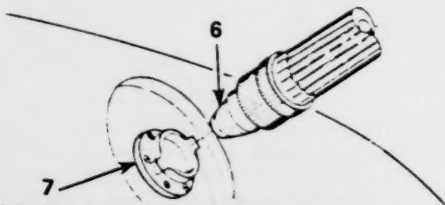
Remove a small hand pump (3) from its pocket.



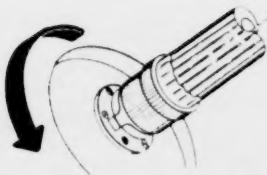
Remove the hose and adapter from pump pocket. Attach the hose (4) to the end of the pump (5) opposite the handle.



Attach the adapter (6) to the end of the hose (4).

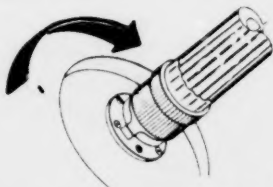


Attach hose adapter (6) to the inflation/deflation valve (7) of the section needing air pressure increase.

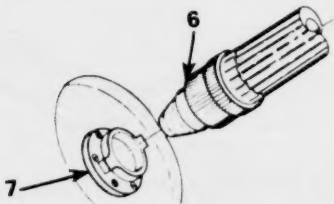


CAUTION: Do not overinflate (3 psi (211 g/sqcm) maximum). Use pressure gage during inflation.

Open inflation valve by turning to the left. Operate pump until the pump handle is hard to move. The desired pressure should be reached at that point.



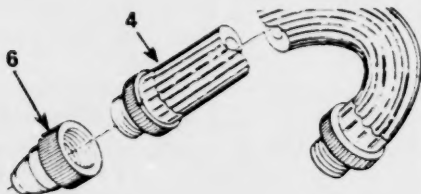
Close the inflation valve by turning it to the right.



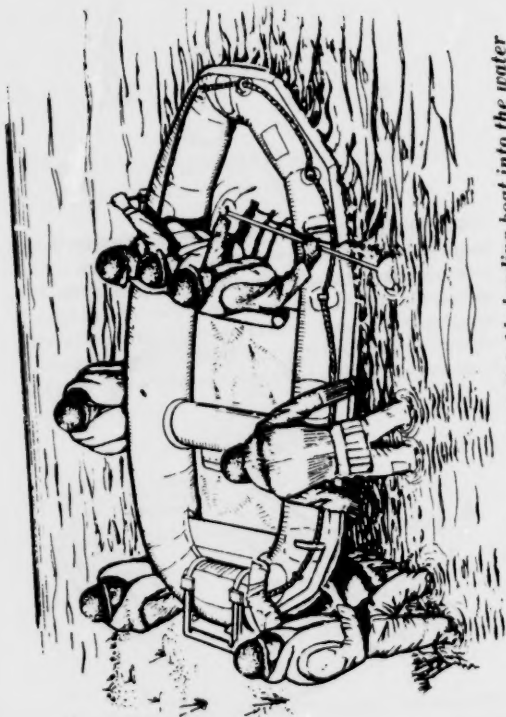
Remove the hose adapter (6) from the inflation valve (7)



Check the air pressure by placing the air gage on the inflation valve and turning the valve to the left. The pressure should be about 3 psi (211 g/sqcm). If the pressure is correct, turn the valve to the right, remove the gage and go to the next step. If the pressure is not correct, turn valve to the right, remove gage, reattach hose and add more air. Recheck pressure with air gage.



Remove the adapter (6) from the hose assembly (4). Remove the hose from the pump. Stow the pump, hose and adapter in their pocket. Make sure all equipment is stowed properly. Attach motor mount if outboard motor is to be used.



Placing 7 - Person CO₂ inflatable landing boat into the water

Placing the boat in the water

CAUTION: Do not carry the boat by the life line as it is not designed for this purpose.

Place the paddles in the boat. Six crewmen; lift the inflated boat by the carrying straps and carry it to the water's edge.

CAUTION: If the water is shallow, ensure the boat is not damaged as it is pushed into the water.

Carry or push the boat into the water until the front half of the boat is floating.

Two crewmen; enter the boat and sit on the front seat and prepare to paddle. Third crewman; enter the boat and sit between the first two men.

Push the boat into the water. Next two crewmen; enter the boat and sit on the middle seat . prepare to paddle. Sixth man; enter the boat and sit between them.

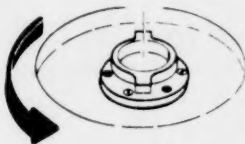
Crew leader; ensure the boat is clear of the bank, enter the boat. Give command to start paddling when safe to do so. Use one of the remaining paddles to guide the boat as required.

Taking Boat Out of Service

Remove boat from the water making sure it is not scraped or punctured.

Remove all loose gear, including motor mount if used. Surface should be free of mud, sand or other matter. Clean boat thoroughly, and dry entire surface with a dry cloth.

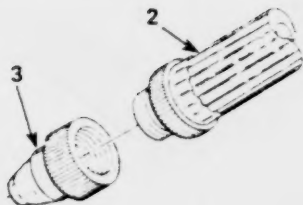
Deflation



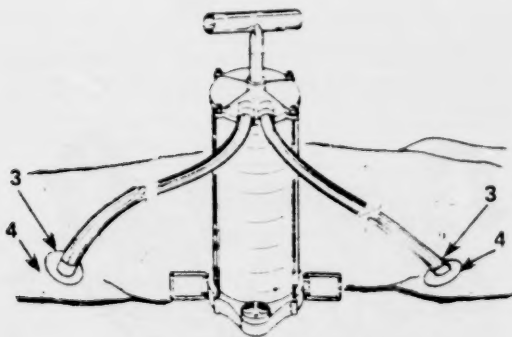
Turn the inflation/deflation valves to the left and allow the air to escape.



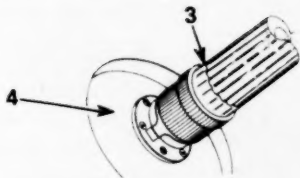
Use the foot held pump (1) for deflation. Attach two hose assemblies to the two ports on the handle end of the pump.



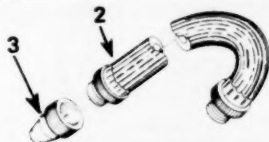
Attach the adapter (3) to the end of the hose (2)



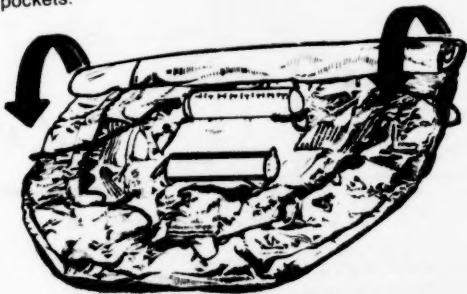
All compartments must be free of air otherwise the boat would be impossible to roll up. Therefore, all compartments must be deflated by use of the pump. Attach the adapters (3) to the inflation/deflation valves (4) used to deflate the boat. Operate the pump until all the air is drawn from the boat.



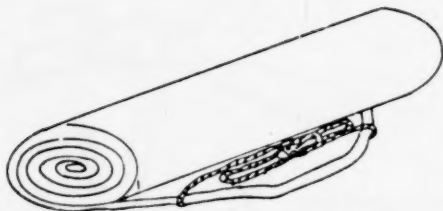
Turn the inflation/deflation valve (4) to the right and remove the hose adapter (3).



Remove the adapters (3) from the hoses (2). Remove hoses from pump and place pump, hoses, and adapters into their pockets.



Fold the 2 sides toward the middle about $4\frac{1}{2}$ inches (13 cm). Starting at the back, roll the fabric in a very tight roll. Make sure the sides remain folded.

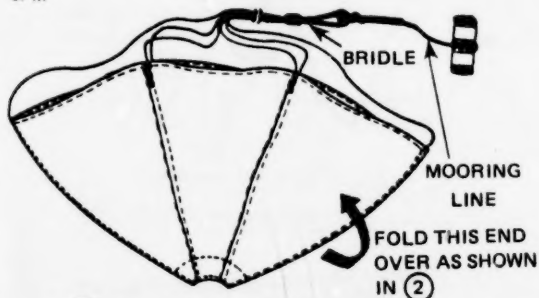


The tow rope stays attached to the D ring. It is rolled up and put on the bow while rolling the boat up.

Near the end of the roll, lay the sea anchor and the towing line on the front of the boat and complete the rolling. The rolled package should measure about 61 inches x 16½ inches x 24 inches (155 cm x 42 cm x 61 cm).

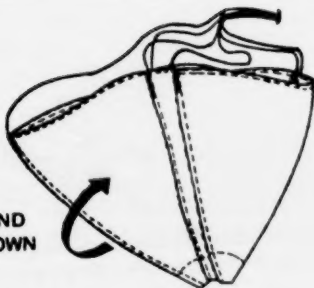
The sea anchor is similar to a canvas bag and is folded up as illustrated. The folded anchor is placed on the bow as the boat is rolled up.

Before folding the sea anchor, the mooring line shall be faked into 8 inch hanks and shall be taped at the ends with 3 inch wide masking tape conforming to UU-T-106, Type I or II.



① Sea anchor laid flat, prior to folding

**FOLD THIS END
OVER AS SHOWN
IN ③**



② First fold completed



**FOLD THIS END
OVER AS SHOWN
IN ④**

③ Second fold completed

Folding procedure for Type II, size 1,
life raft sea anchor



FOLD THIS END
BACK AS SHOWN
IN ⑤

④ Third fold completed



FOLD THIS END
BACK AS SHOWN
IN ⑥

⑤ Fourth fold completed

Folding procedure for Type II, size 1,
life raft sea anchor

MOORING LINE

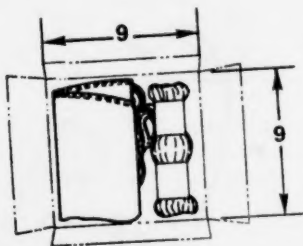
PRIOR TO FINAL
FOLD, COIL BRIDLE
AND PLACE ON
SEA ANCHOR



FOLD THIS END
BACK AS SHOWN
IN ⑦

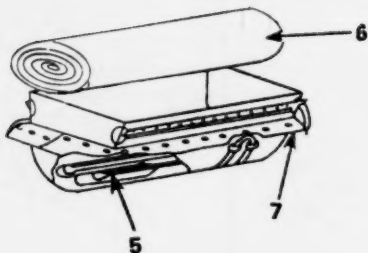
⑥ Fifth fold completed

PACKAGING
CONTAINER

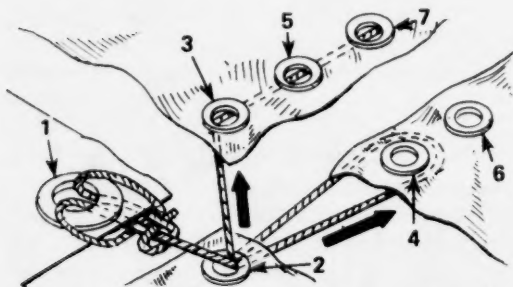


⑦ Sea anchor folded and ready for
insertion into the packaging container

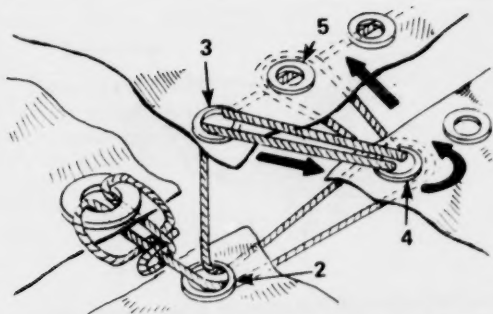
Folding procedure for Type II, size 1,
life raft sea anchor



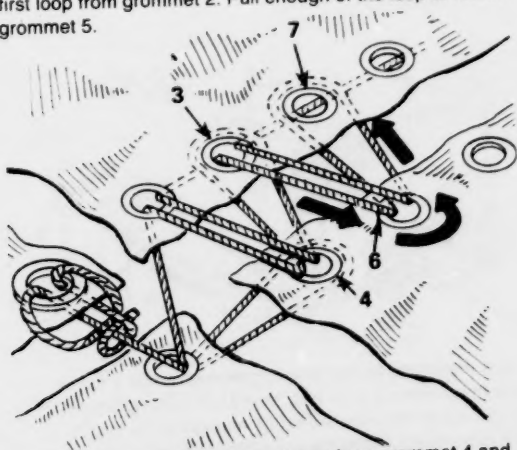
Place the paddles (5) in the bottom of the carrying case, staggering the blades to make a flat surface. Place the rolled boat (6) on top of the paddles. Lay the case flaps (7) over and prepare to lace the case.



Tie one end of the lacing rope to grommet 1 with a fisherman's bend. Form a loop and thread it through grommet 2 from the top to the underside. Pull enough of the loop to reach grommet 4. Place the remaining line under the grommets on the left side (3, 5, 7, etc.)



Pull the line through grommet 3 and form a second loop. Thread the second loop through grommet 4 and also the first loop from grommet 2. Pull enough of the loop to reach grommet 5.



Pull the line through the second loop from grommet 4 and grommet 5 and form a third loop. Thread the third loop

through grommet 6 and pull enough of the loop to reach grommet 7.

Repeat the above steps with grommet 7 and each of the remaining grommets on the left side. Tie the end of the line to the last grommet with a fisherman's bend or a like knot.

Fold over sealing flaps and fasten male snaps to the female snaps.

Operation of Boat Components

Hand pumps

The boat has two types of hand operated air pumps. One spare adapter is furnished with each pump.

The pumps are used to inflate and deflate the cross tubes, main tube, spray tube, inflatable floor and inflatable skeg. They are also used to add pressure to the main tube if the pressure becomes low after inflating with CO₂.

Hand-Held, Hand Operated Pumps

There are two hand-held, hand operated pumps, complete with hoses and adapters, supplied with the boat. The pumps are located in the boat pockets near the rear of the boat.

Foot-Held, Hand Operated Pump

The foot-held, hand operated pump, complete with hose and adapter, is located in the boat pocket near the front (bow) of the boat.

Paddles

Six laminated wooden paddles, five feet in length, are supplied with the boat. They are stored in the carrying case under the folded boat.

CO₂ Cylinders

The landing boat has two CO₂ cylinders, 205 cu. in. (3360 ccm) capacity, charged with 4.9 pounds (2.2 kg) of Carbon Dioxide. The spare cylinder is stored in the carrying case pocket. The charge inflates the main tube tube to about 3 psi (211 g/sqcm).

The main tubes are inflated by the CO₂, to be topped off with the pump. The pump is used to inflate the other compartments. The cylinder is connected by a hose and manifold.

Repair Kit

Make sure the Repair Kit is stored in the Repair Kit pocket. Make sure that all items listed below are stored in the repair kit.

Stitcher and Scraper

Air Pressure Gage

Insert Valves

Cloth, Coated Polychloroprene

Adhesive, Rubber Chloroprene

Buffing Solution

Scissors

Wire Brush

Pliers

Steel Roller

Storage of Boat and Accessories

Boat

The boat should be stored in a cool, dry area out of direct sunlight.

Avoid excessive handling which could cause scraping.

Do not store near oil or oily items; keep free from oil, grease and solvents.

Do not use packing hooks when moving or stacking cased boats.

Avoid nails, staples, or any other sharp point.

Hand Pumps

The hand-held and foot-held pumps should be stored in their own pockets in the landing boat. Check the pockets before folding and packing the boat.

Paddles

The wooden paddles are placed in the carrying case before the rolled boat.

Section IV OPERATION UNDER UNUSUAL CONDITIONS

Operation in Extreme Heat

When necessary to keep the boat inflated in direct hot sunlight, do not let the air pressure increase above 3 psi. Damage could result if pressure becomes too great.

Pressure levels within the air compartments should be kept about 3 psi (211 g/sqcm). Check for proper pressure using the air gage. If necessary, let out extra air by turning the inflation/deflation valve to the left. When the air pressure returns to the proper pressure, close the valve by turning it to the right until locked. Remove air gage and place it in its pocket.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I LUBRICATION INSTRUCTIONS

General

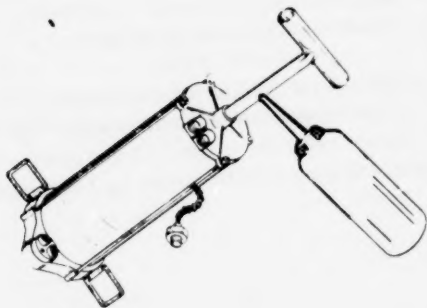
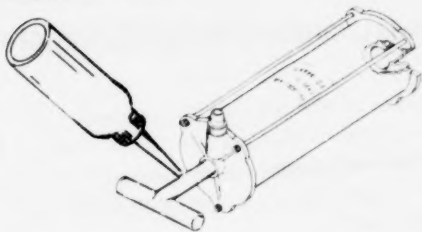
The hand operated pumps need an application of silicone compound lubricant at various times for proper operation.

The silicone compound lubricant should remain sealed at all times except during use. Do not allow dirt, dust or water to mix with the lubricant.

All outside parts of the pumps not needing lubricant should be kept clean. After lubrication, wipe off all lubricant with a clean, dry cloth and operate the pumps to make sure they work as they should.

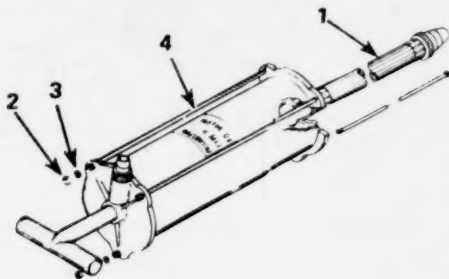
Lubrication Instructions

The hand and foot pump handle rods shall be lubricated after each deflation.



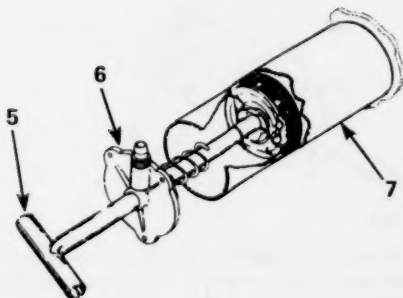
Hand-Operated Hand Held Pump

Inspect and lubricate the hand pump yearly as follows:

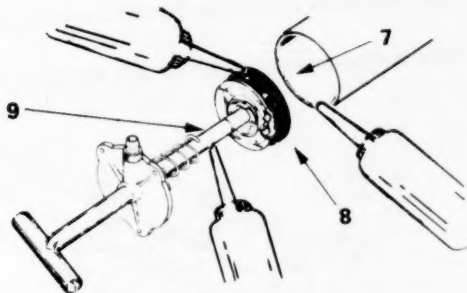


Remove hose assembly (1) if installed.

Remove nuts (2), washers (3), from spokes (4).



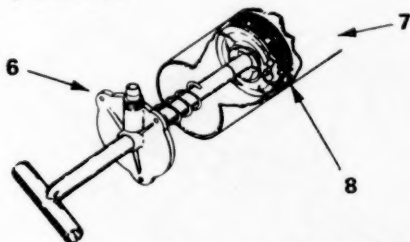
Remove piston by pulling the pump handle (5) and cap (6) away from the cylinder (7).



NOTE

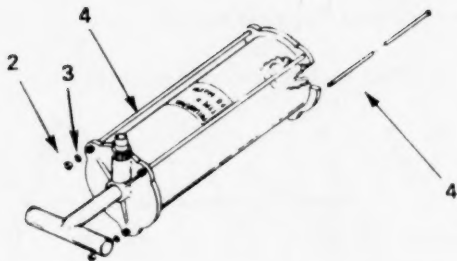
Do not disassemble the piston.

Use a clean rag and wipe piston cup (8) clean. Apply a small amount of silicone compound to the piston cup (8), inside wall of the cylinder (7) and piston rod (9).



Carefully insert the piston into the cylinder (7) using fingers as a guide to make sure the piston cup (8) is not damaged.

Apply sealing compound to the open end of the cylinder (7) and install cap (6).



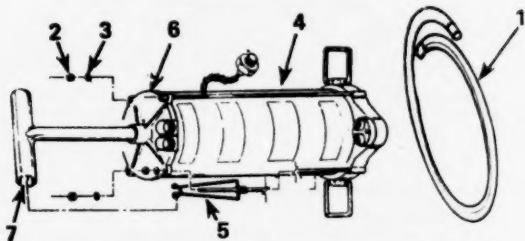
Install spokes (4), washers (3), nuts (2) and tighten evenly on spokes (4).



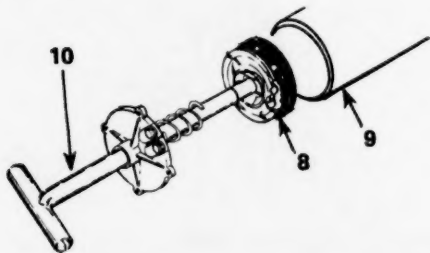
Operate the handle a few times to make sure the silicone compound is spread evenly.

Hand-operated Foot-held Pump

The pump shall be lubricated as follows:

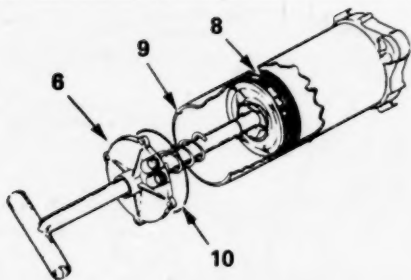


Remove hose assembly (1) if installed. Remove nuts (2), washers (3), spokes (4), and carrying clip (5). Gently tap cap (6) and remove piston handle (7) and cap (6) as one unit.

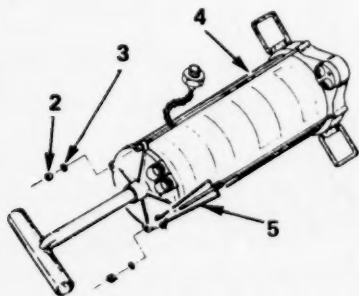


Use a clean rag to wipe piston cup (8) and cylinder (9) clean.

Apply a small amount of silicone compound to piston cup (8), cylinder wall (9) and piston rod (10).



Carefully insert piston assembly (8) into cylinder (9) using fingers to make sure piston cup (8) is not damaged or cut. Make sure gasket (10) is in the cap and install cap (6) onto cylinder (9).



Install spokes (4) and put carrying clip (5) on one spoke. Install washers, (3), nuts (2) and tighten evenly.



Operate pump a few times to make sure silicone compound is spread evenly.

Section II

TROUBLESHOOTING PROCEDURES

Table 3-1 lists the common problems which you may find during the operation or maintenance of the 7-Person CO₂ Inflatable Landing Boat or its components. You should perform the tests/inspections and corrective actions in the order listed.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and actions. If a problem is not listed or is not corrected by listed actions, tell your supervisor.

Table 3-1 Troubleshooting

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. ONE OR MORE COMPARTMENTS WILL NOT HOLD AIR PRESSURE.

Step 1. Inspect defective air compartment for signs of leakage.

Repair damaged areas by following steps on page 3-19.

Step 2. Inspect any old patches for leakage.

Replace damaged patch by following steps on page 3-19.

Table 3-1 Troubleshooting - continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

2. CO₂ CYLINDER WILL NOT INFLATE BOAT.

Step 1. Inspect window for a green indication.

Fill CO₂ bottle if required.

Step 2. Inspect the cylinder pull cable to make sure it is connected to sheave.

If necessary, connect cable as follows:

(1) Remove the cover and pass the cable through the ferrule and around the sheave. Do not allow sheave to turn, as this would allow the cylinder to discharge.

(2) Before putting cover on, make sure the sheave is reset and that the cable and ball are firmly seated around the sheave.

(3) Put cover on and make sure the window has a green indication.

(4) Put a seal wire on valve.

Step 3. Weigh the CO₂ cylinder. Total weight includes cylinder and all parts. If gas charge has dropped 1½ ounces (42 grams) or more from proper weight printed on cylinder, recharge to proper weight.

Recharge CO₂ cylinder by following the steps on page 3-12.

Table 3-1 Troubleshooting - continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

2. CO₂ CYLINDER WILL NOT INFLATE BOAT.

(Cont.)

Step 4. Inspect adapter and make sure the CO₂ can pass freely.

Replace adapter or hose if problem is found.

3. HAND OPERATED PUMP WILL NOT INFLATE BOAT.

Check hand operated pump for proper operation. The loads applied to the handle and the time shall be as follows:

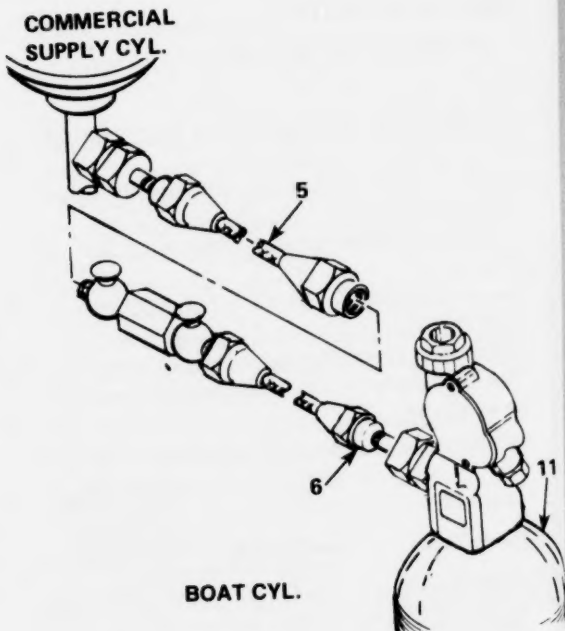
NOTE: Make sure the outlet port(s) is sealed.

Pump Type	Load Pounds	Travel Time in Minutes (minimum)
Foot Held (Type I)	20	2
Hand Held (Type II, Size 1)	15	1 1/4

NOTE: If travel time is less than time shown in Travel Time in Minutes column, the pump test will be noted as a failure.

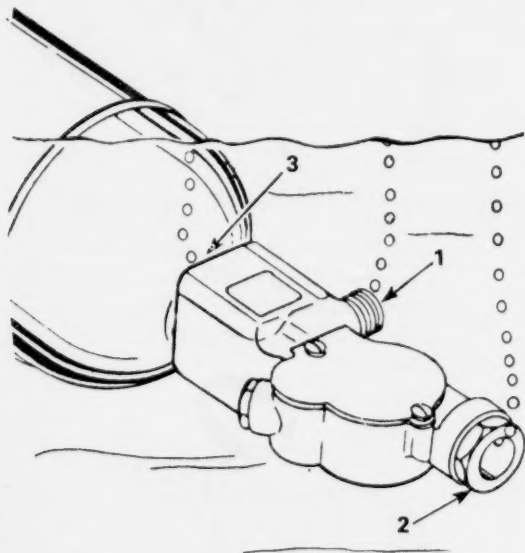
Repair the pump by following the steps in Chapter 3. If pump cannot be repaired, get a new pump.

Section III RECHARGING PROCEDURES



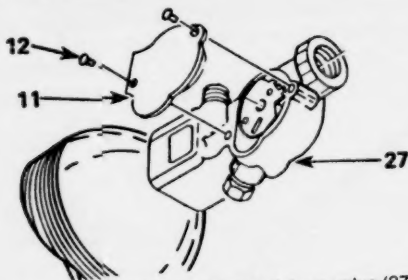
To refill the cylinder (11), connect the carbon dioxide filling line (5) to the outlet of the boat valve using adapter (6) (outlet of the boat valve is $\frac{3}{8}$ inch straight pipe thread).

Fill with proper weight of CO₂ as stenciled on the cylinder. Line pressure will open the valve; releasing pressure will permit valve to close. Disconnect the filling adapter (6) from the valve outlet and test for leaks as follows:



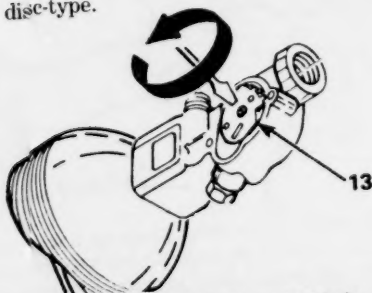
Place the valve body in water. Check for leaks from the safety outlet hole (1), the outlet (2) and the valve-to-cylinder connection (3). Make note of any leaks and remove from the water. If there are no leaks, remove the valve from the water and blow off all water with clean, dry compressed air.

Recharging the CO₂ Cylinder



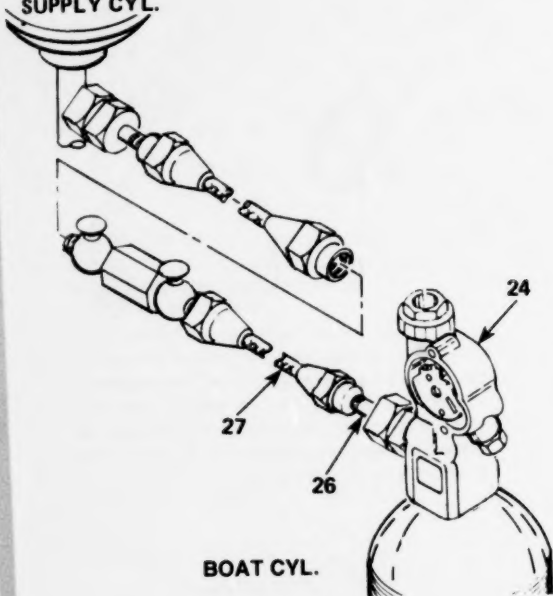
Remove screws (12) and plate (11) from valve (27).

NOTE: The seat-type valve these boats are fitted with does not have to be removed during refilling like the old-fashioned, breakable, disc-type.



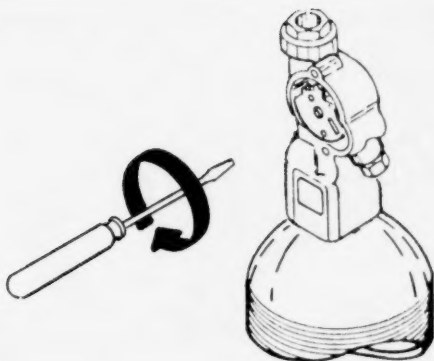
Reset the sheave (13) by inserting a flat blade screwdriver into the slot of the sheave and turn to the left until it stops.

**COMMERCIAL
SUPPLY CYL.**

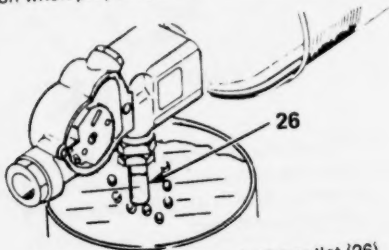


Connect the carbene dioxide charging line (27) to the outlet of the boat cylinder valve (24) using adapter (26) (P/N 21499). Outlet is a 3/8 in. straight pipe thread.

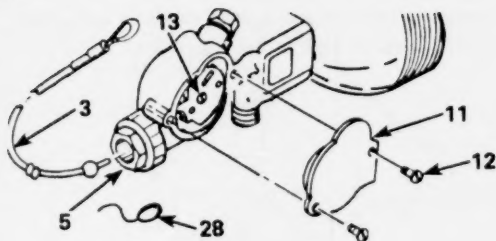
Fill to proper weight as written on the cylinder. Line pressure will open the valve (24); release of pressure will allow valve to close.



Disconnect the charging adapter and weigh the cylinder. If cylinder (1) is over weight, insert a flat blade screwdriver and turn slowly to the right until the gas begins to escape. Turn sheave to reset position when proper cylinder weight is indicated.



Check for leakage by putting only the outlet (26) in water. Make sure not dirt is on the valve seat. If there is dirt, it may be removed by giving the valve a quick short blow. Make sure the proper weight is kept.



Put cable (3) through opening (5) and around the sheave (13). Do not allow sheave to turn as this would cause the CO₂ to discharge.

Before installing the cover, make certain that the sheave is fully reset and the cable and ball are properly seated around the sheave.

Put cover (11) and screws (12) on valve. The green indicator should show through the window.

install a seal wire (28).

Section IV

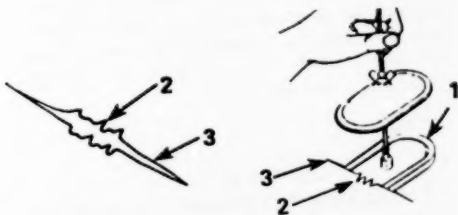
EMERGENCY REPAIRS TO BOAT

Introduction. During the course of operating the 7-Person Inflatable Landing Boat certain repairs may be needed to keep it and the pumps in a safe condition. These maintenance steps can be done by you in the field.

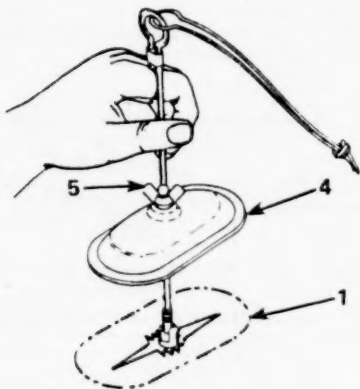
Emergency boat repairs can be made by using the sealing clamp located in the repair kit.



Select the proper size sealing clamp.



Cut the hole the width of the base plate.
Insert the base plate (1) into the damaged area
(2) that has been cut (3).



Turn the base plate (1) so it lines up with the slit. Set the top plate (4) over the base plate. Start and tighten wing nut (5) to secure the clamp.

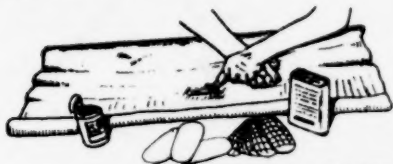
Inflate repaired area as shown in Table 2-1. After inflation, inspect area for leakage.

Normal Repairs to Boat

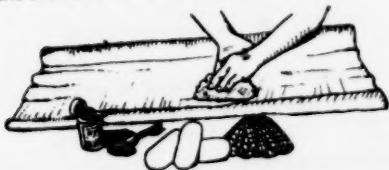
The following can be done while the boat is in the water if the damaged area can be kept dry. For tears or holes larger than those which can be covered with a single patch, overlapping patches may be used to provide enough coverage and reinforcement.

NOTE: The necessary material and equipment is in the repair kit which is stored in the carrying case pocket.

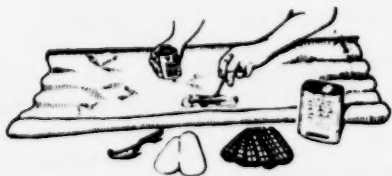
Dry the surface to which the patch is to be applied. Cut a patch which will overlap the tear $2\frac{1}{2}$ inches (6.3 cm) on all sides.



Using a roughing tool, sandpaper or wire brush, thoroughly rub one side of the patch and a 1-inch (2.5 cm) border around the other side. Also rub the area around the cut or tear.



Wash all rubbed areas with solvent.



Apply three coats of cement to the rubbed area on the boat and patch, allowing each coat to dry at least ten minutes before applying the next coat.



Apply patch to damaged area; work from center of patch to all edges.



Roll patch well with roller, working from the center toward the edges.

Dust entire repaired area with talcum powder and allow at least 24 hours before inflating or packing boat.

Inflate repaired area as shown in Table 2-1. After inflation, inspect area for leakage.

NOTE: For large cuts or tears, enlarge the opening enough to permit an inside patch to be applied as well as the outside patch.

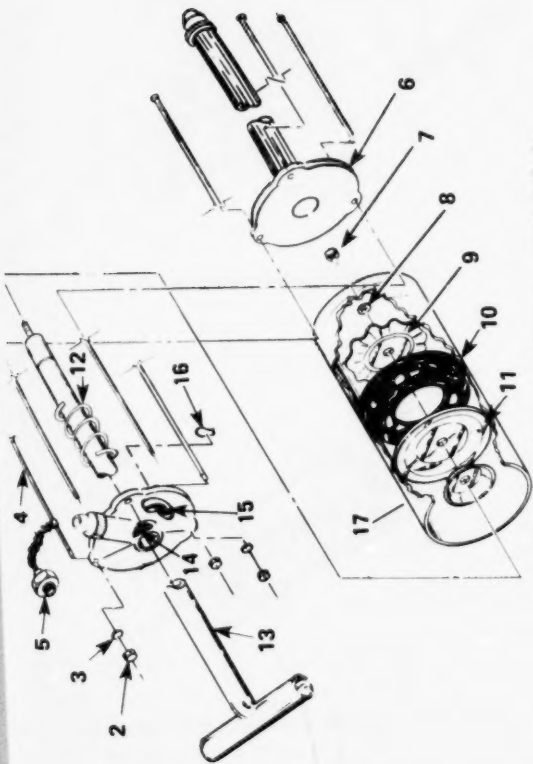
NOTE: For larger repairs use Repair Kit, Inflatable Craft for Pneumatic Ponton Floats, Bridge Erection Rollers, Assault Boats and Reconnaissance Boats, SC 2090-97-CL-E06, NSN 2090-00-724-8569.

Repair of the Hand-operated, Hand-held Pump

ILLUSTRATED PARTS BREAKDOWN

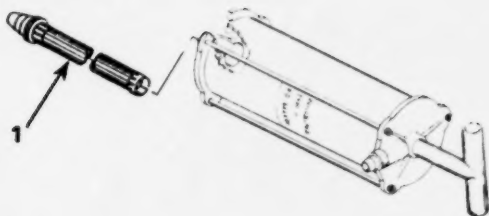
1. Hose Assembly
2. Nut
3. Washer
4. Spoke
5. Cap
6. Base
7. Nut
8. Washer
9. Retainer Cup

10. Piston Cup
11. Backing Cup
12. Spring
13. Handle
14. O-Ring
15. Flapper Check Valve
16. Flapper Valve
17. Cylinder

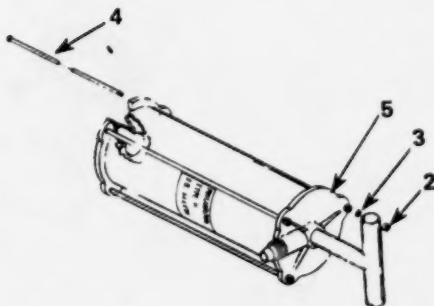


Hand operated hand held pump - exploded view

Disassembly

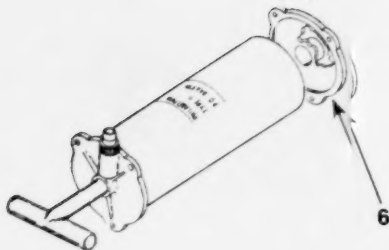


If installed, remove the hose assembly (1)

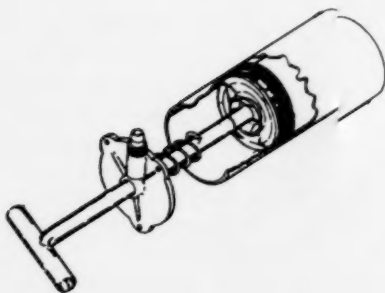


Remove the nuts (2), washers (3) and spokes (4).

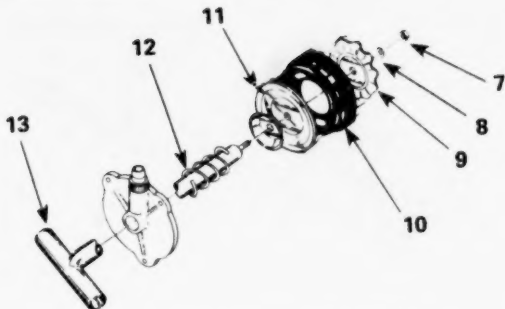
Gently tap the cap (5) to make it loose.



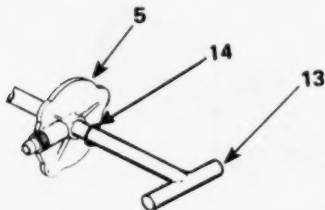
Remove base (6) from the cylinder.



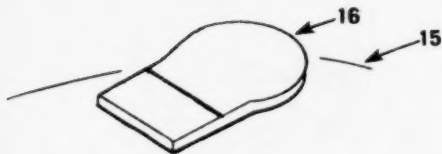
Pull the handle away from the cylinder and remove as a piston assembly.



Remove the nut (7), washer (8), retainer cup (9), piston cup (10), backing cup (11), and spring (12) from the handle (13) shaft.



Remove handle (13) from cap (5). Remove O-ring (14) from cap (5).



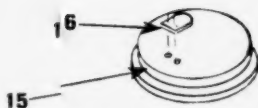
Remove flapper check valve (16) from the valve (15).

Cleaning and Inspection

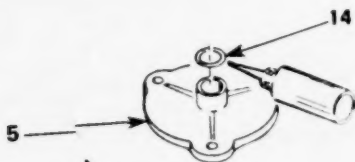
WARNING: Dry cleaning solvent, P-D-680, used to clean parts, may cause danger to persons and property. Do not allow the solvent to touch the skin over long periods of time. Do not use near open flame or heat. Flash point of solvent is 100°F-138°F (38°C-59°C).

Use dry cleaning solvent P-D-680 to clean all the silicone compound from the metal parts. The piston cup, O-ring and flapper valve should be changed if needed.

Assembly

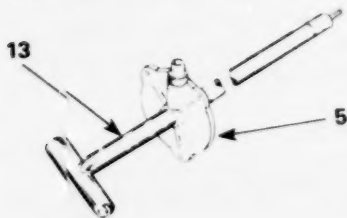


Attach the flapper valve (16) to the flapper check valve (15).

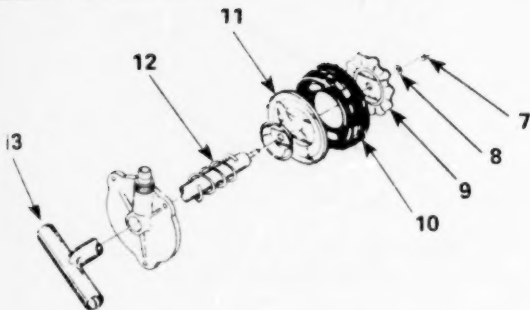


Apply a small amount of silicone compound on the O-ring (14).

Place O-ring over the cap (5).

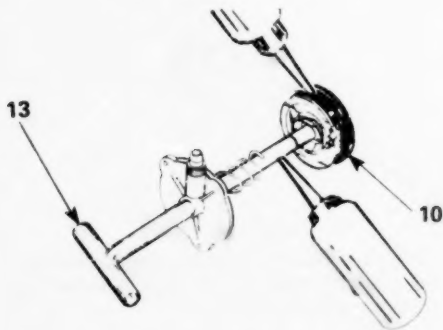


Install handle (13) into cap (5).



Install in order shown, the spring (12), backing cup (11), piston cup (10), retainer cup (9), washer (8), and nut (7) onto handle (13).

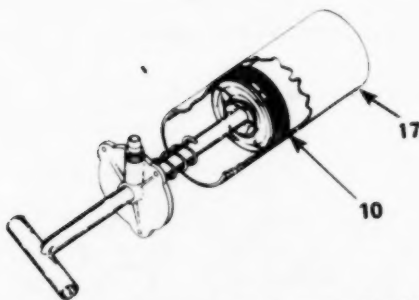
Tighten nut (7) to secure.



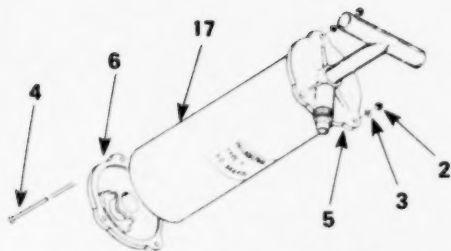
Apply silicone compound to the rod of the handle (13) and piston cup (10).



Put sealing compound on the open ends of the cylinder (17) to prevent any air leakage.



Using your fingers as a guide, ensure the piston cup (10) is not cut, insert the piston assembly into the cylinder (17).



Put base (6) on cylinder (17). Push cap (5) firmly against cylinder. Install spokes (4), washers (3) and nuts (2). Tighten nuts securely.

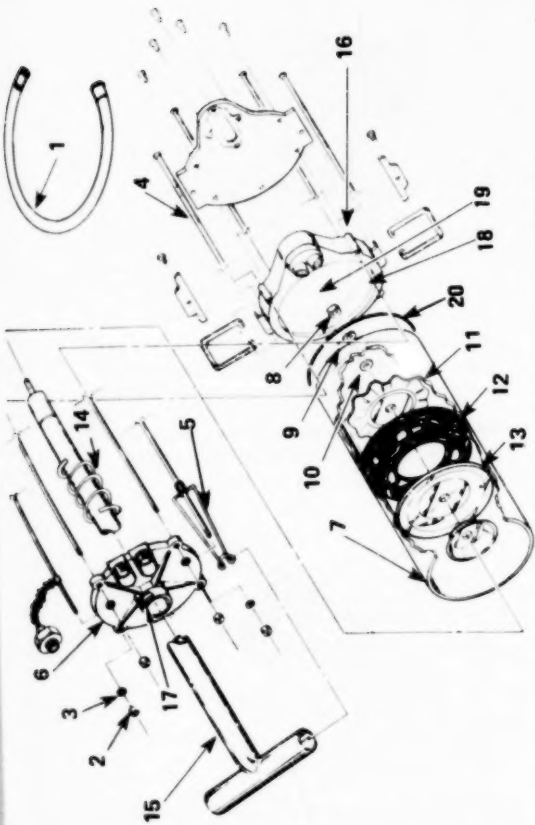


Operate the handle a few times to make sure the silicone compound is spread evenly.

Repair of the Hand-operated, Foot-held Pump

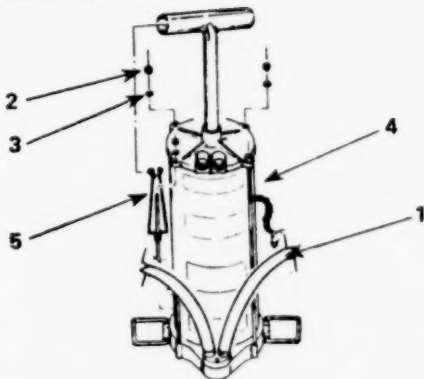
ILLUSTRATED PARTS BREAKDOWN

- | | |
|------------------|-------------------------|
| 1. Hose Assembly | 11. Retainer Cup |
| 2. Nut | 12. Piston Cup |
| 3. Washer | 13. Backing Cup |
| 4. Spoke | 14. Spring |
| 5. Carrying Clip | 15. Handle |
| 6. Cap | 16. Base |
| 7. Cylinder | 17. O-Ring |
| 8. Nut | 18. Flapper Valve |
| 9. Split Washer | 19. Flapper Check Valve |
| 10. Plain Washer | 20. Gasket |

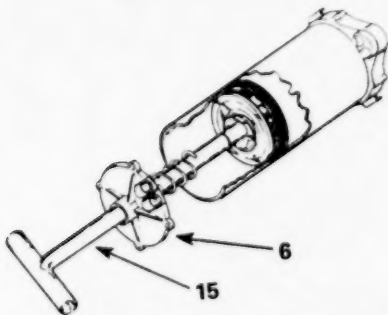


Hand operated foot held pump - exploded view

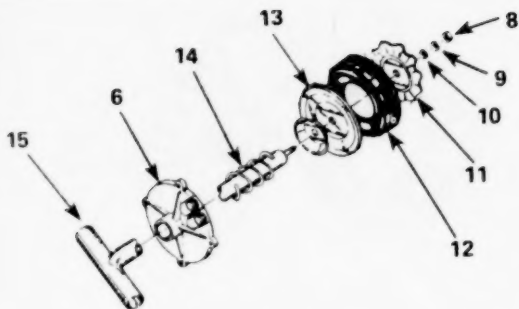
Disassembly



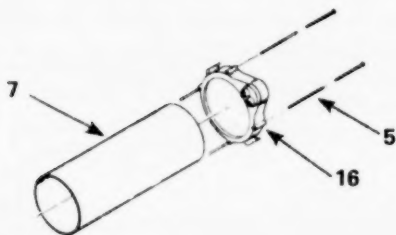
Remove hose assemblies (1), if installed, nuts (2), washers (3), spokes (4) and carrying clip (5).



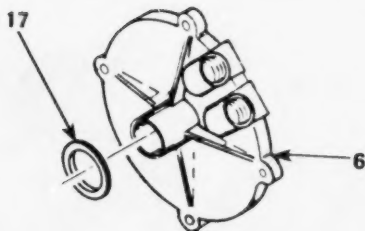
Remove handle (15), cap (6) and piston as a unit.



Remove nut (8), lock washer (9), flat washer (10), retainer cap (11), piston cup (12), backing cup (13), spring (14) and pull handle (15) through cap (6).



Remove base (16) and spokes (5) from cylinder (7).

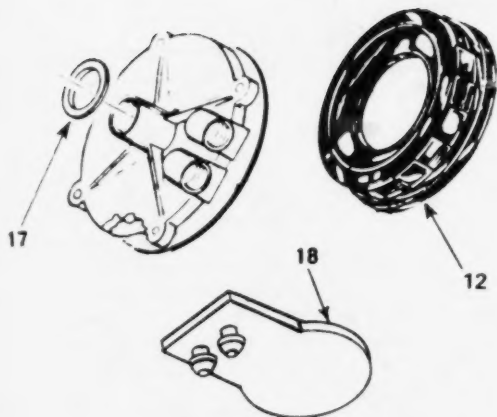


Remove O-ring (17) from cap (6).

Cleaning and Inspection

WARNING: Dry cleaning solvent, P-D-680, used to clean parts, may cause danger to persons and property. Do not allow the solvent to touch the skin over long periods of time. Do not use near open flame or heat. Flash point of solvent is 100°F-138°F (38°C-59°C).

Use a clean rag and cleaning solvent to remove silicone compound from all parts.

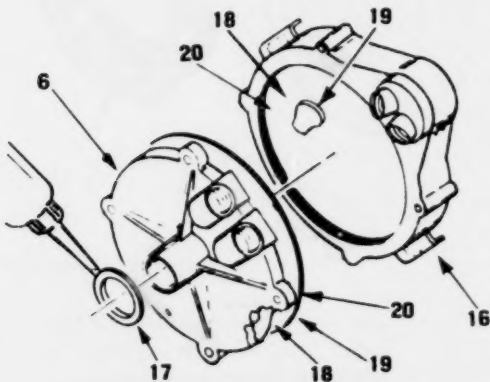


The piston cup (12), O-ring (17) and the flapper valve (18) should be changed.

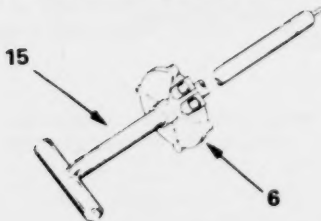
NOTE: The foot pump contains 5 flappers. There are 3 in the base assembly and 2 in the cap assembly.

Assembly

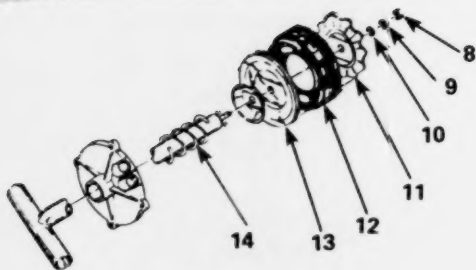
Install flappers (18) into the flapper valve assemblies (19) and install assemblies into cap (6) and base (16).



Apply small amount of silicone compound on the O-ring (17). Put O-ring into cap (6). Place a gasket (20) into the cap (6) and a gasket (20) into the base (16).

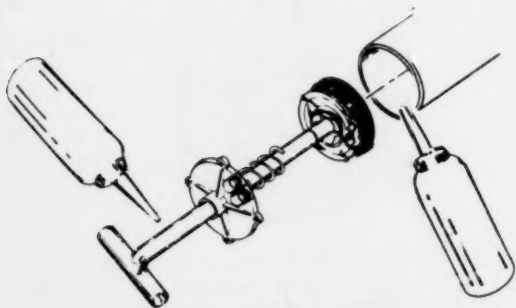


Slide handle (15) into cap (6).

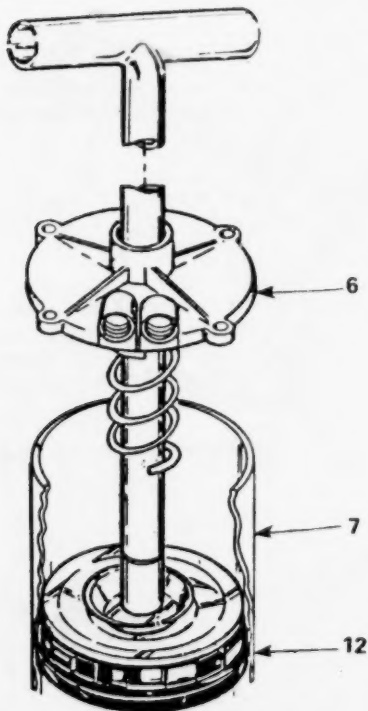


Put these items on the shaft in the order they are listed: spring (14), backing cup (13), piston cup (12), retainer cup (11), flat washer (10), lock washer (9), and nut (8).

Tighten nut (8) to secure all parts.



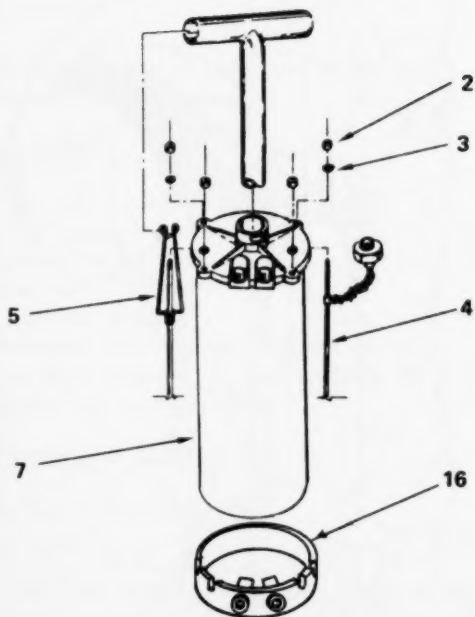
Apply silicone compound to the inside of the cylinder and on the handle rod.



Push the piston assembly into the cylinder (7).

Use fingers to make sure piston cup (12) is not cut.

Push cap (6) until it is touching the top of the cylinder (7).



Add base (16) to cylinder (7). Push spokes (4) through base (16) adding carrying clip (5) to one of the spokes. Install washers (3) and nut (2) to spokes and tighten evenly.



Operate pump a few times to make
sure silicone compound is spread
evenly.

APPENDIX A References

A-1 SCOPE

This appendix lists all forms, field manuals, and technical manuals referenced in this manual.

A-2 FORMS

Equipment Inspection and

Maintenance Worksheet DA Form 2404

Maintenance Request DA Form 2407

Maintenance Request

Continuation Sheet DA Form 2407-1

Recommended Changes to Publications

and Blank Forms DA Form 2028

Quality Deficiency Report SF 368

A-3 TECHNICAL MANUALS

Administrative storage of

Equipment TM 740-90-1

Procedures for Destruction of Equip-

ment to Prevent Enemy Use TM 750-244-3

The Army Maintenance Management

System (TAMMS) DA PAM 738-750

Repair Kit, Inflatable Craft

for Pneumatic Ponton Floats,

Bridge Erection Rollers,

Assault Boats and

Reconnaissance Boats SC 2090-97-CL-E06

A-1/(A-2 blank)

APPENDIX B Components of End Item and Basic Issue Items

SECTION I - INTRODUCTION

Scope

This appendix lists important parts of and basic issue items for the 7-person boat to help you take stock of items needed for safe, good working use.

General

The Parts of End Item List is divided into the following sections:

a. Section II. Components of End Item.

Not applicable.

b. Section III. Basic Issue Items. These are the minimum items needed to place the 7-person boat in the water, to operate it, and to make necessary repairs. These items must be with the boat during use and whenever it is transferred between officers. The pictures will help you with hard-to-identify items. The manual is your method of requesting BIL, based on Table(s) of Organization and Equipment (TOE)/Modification Table of Organization and Equipment (MTOE) authorization of the end item.

Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Column (1): Illustration. This column is divided as follows:

(1) **Figure Number. (Fig. No.)** Indicates the figure number of the picture on which the item is shown (if it applies).

(2) **Item Number.** The number used to identify an item called out in the figure.

b. Column (2): National Stock Number (NSN). Indicates the National Stock Number assigned to the item and which will be used for requesting the item.

c. Column (3): Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the (FSCM) in parentheses followed by the part number.

d. Column (4): Unit of Measure (U/M). Indicates the measure used in performing the actual operational

maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5). Quantity Required (Qty Req). Indicates the quantity of the item authorized to be used with/on the equipment.

SECTION III BASIC ISSUE ITEMS LIST

(1) Illustration (a) (b) Fig Item No. No.		(2) Nat'l Stock Number	(3) Description FSCM and Part Number		Usable on Code	(4) U/M	(5) Qty Req
B-1	1		Pump Assembly Hand (In Pocket) (97403) 13211E9598			EA	2
B-1	2	4320-00- 580-6672	Pump Assembly Foot (In Pocket) (97403) 13211E9597			EA	1
B-1	3		Carrying Case (80064) S8225(6) 1428683			EA	1
B-1	4	1940-00- 712-8106	Motor Mount (On Boat) (80064) S8202-1170330			EA	1

SECTION III BASIC ISSUE ITEMS LIST

(1) Illustration (a) (b) Fig Item No. No.	(2) Nat'l Stock Number	(3) Description FSCM and Part Number	(4) Usable on Code U/M	(5) Qty Req
B-1 5	2040-00- 268-9261	Paddle, Wood, 5 Foot (In Boat) (81349) MIL-P-15737	EA	6
R-1 6	2090-00- 812-8478	Repair Kit, Inflatable (In Boat) (97403) 13211E3082-2	EA	1
B-1 7	2040-00- 368-2880	Anchor (In Boat) (80064) S8225-1298540	EA	1
B-1 8		Cylinder (In Boat) (96906) MS 26545B2CB206	EA	1

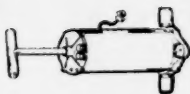
B-5

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B-6



1



2



3



4



8



9



5



6



7

Figure B-1. Integral parts of end item and basic issue items.

**APPENDIX C Additional Authorization List
(AAL)**

(Not applicable)

C-1/(C-2 blank)

APPENDIX D Expendable/Durable Supplies and Materials List

Section I. INTRODUCTION

Scope

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the 7-person inflatable landing boat. These items are permitted by CTA50-970, Expendable items (except medical, class V, repair parts, and former items).

Explanation of columns

a. Column 1—Item Number. This number is assigned to the entry in the listing and is explained in the instructions to identify the material.

b. Column 2—Level. This column identifies the lowest level of maintenance needed for the listed item.

C—Operator/Crew

O—Organization Maintenance

F—Direct Support Maintenance

H—General Support Maintenance

c. Column 3—National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item No.	Level	National Stock Number	Description	U/M
1	C		Adapter, Hose 13211E9619 (97403)	EA
2	C	5110-00- 223-7782	Knife 16950 (11273)	EA
3	C	4320-00- 580-6672	Pump Assembly, Foot, 13211E9597 (97403)	EA
			Consisting of:	
	C		Barb, Swivel 13211E9675 (97403)	EA
	C		Base Plate 13211E9607 (97403)	EA

D-2

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock Number	Description	U/M
	C		Cap Assembly 13211E9606 (97403)	EA
	C		Clip, Carrying 13211E9653 (97403)	EA
	C		Cup Backing 13211E9637 (97403)	EA
	C		Cup, Piston 13211E9636 (97403)	EA
	C		Ferrule 13211E9681-2 (97403)	EA
	C		Gasket 13211E9650 (97403)	EA

D-3

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item No.	Level	National Stock Number	Description	U/M
	C		Handle, Pump 13211E9604 (97403)	EA
	C	4720-01- 243-4333	Hose 13211E9683 (97403)	EA
	C		Hose Assembly (48 inches) 13211E9605-1 (97403)	EA
	C	5310-00- 761-6882	Nut, Plain Hexagon MS51967-2 (96906)	EA
	C		Nut, Spoke 13211E9657 (97403)	EA
	C		Nut, Swivel 13211E9609 (97403)	EA

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock Number	Description	U/M
	C	5330-00- 542-1457	O-Ring MS29561-116 (96906)	EA
	C		Plate, Valve 13211E9648 (97403)	EA,
	C		Plate, Valve 13211E9656 (97403)	EA
	C		Retainer Cup 13211E9635 (97403)	EA
	C		Spring, Helical 13211E9685-1 (97403)	EA
	C		Spoke 13211E9688 (97403)	EA
				D-5

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock	Description	U/M
		Number		
	C		Valve, Flapper, Check 13211E9631 (97403)	EA
	C	5310-00- 809-4053	Washer, Flat MS27183-10 (96906)	EA
	C	5310-00- 582-5965	Washer, Lock MS35338-44 (96906)	EA
4	C		Pump Assembly, Hand 13211E9598 (97403)	EA
			Consisting of:	
	C		Base, Pump 13211E9665 (97403)	EA
	C		Barb, Swivel 13211E9675 (97403)	EA

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock	Description	U/M
		Number		
	C		Bib, Hose 13211E9621 (97403)	EA
	C		Cage, Valve Assy 13211E9610 (97403)	EA
	C		Cap 13211E9666 (97403)	EA
	C		Cup, Backing 13211E9639 (97403)	EA
	C		Cup, Piston 13211E9676 (97403)	EA
	C		Cup, Retainer 13211E9633 (97403)	EA

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock	Description	U/M
		Number		
	C		Cylinder, Pump 13211E9649-2 (97403)	EA
	C		Ferrule 13211E9681-2 (97403)	EA
	C		Flapper Check Valve 13211E9630 (97403)	EA
	C		Handle, Pump 13211E9678 (97403)	EA
	C		Hose 13211E9683 (97403)	EA
	C		Hose Assembly 13211E9601 (97403)	EA

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock	Description	U/M
	C	5310-00- 761-6882	Nut, Plain Hexagon MS51967-2 (96906)	EA
	C		Nut, Spoke 13211E9659 (97403)	EA
	C		Nut, Swivel 13211E9609 (97403)	EA
	C	5330-00- 585-1065	O-Ring MS29561-113 (96906)	EA
	C	5330-00- 702-4713	O-Ring MS29561-115 (96906)	EA
	C		Plate, Valve 13211E9667 (97403)	EA

Section II

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item		National		
No.	Level	Stock	Description	U/M
		Number		
	C		Piston Assembly 13211E9614 (97403)	EA
	C		Spoke 13211E9658-2 (97403)	EA
	C		Spring, Helical 13211E9685-2 (97403)	EA
	C	5310-00- 809-3078	Washer, Flat MS27183-11 (96906)	EA
5	C	2090-00- 287-6232	Repair Kit, Emergency	EA

Consisting of:

Section II
EXPENDABLE/DURABLE SUPPLIES
AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item No.	Level	National Stock Number	Description	U/M
	C	8040-00- 247-7642	Adhesive, Rubber Stabond Chloroprene T-161 (25670)	EA
	C	8305-00- 641-4230	Cloth, Coated Polychloroprene MIL-C-14505 (81349)	EA
	C	5420-00- 506-4316	Gage, Low Air Pressure MIL-G-45911 (81349)	EA
	C	7610-00- 115-9994	Instruction Sheet 13211E3074 (87403)	EA
	C	5120-00- 224-1567	Pliers GGG-S-278 (81348)	PR
	C	8510-00- 817-0295	Powder, Talcum A-A-42 (81348)	EA
				D-11

Section II

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item No.	Level	National Stock Number	Description	U/M
	C	5340-00- 720-8858	Sealing Clamp MIL-R-52255 (81349)	EA
	C	5420-00- 491-6340	Solution, Buffing 22-043 (91540)	EA
	C	5120-00- 248-5800	Stitcher MIL-S-45179 (81349)	EA
	C	2090-00- 786-9149	Valve, Capsule 13211E3088 (97403)	EA
6	C	5340-00- 292-0886	Seals, Lead	EA
7	C	2010-00- 769-1502	Towing Bridle S8225H 1298959 (80064)	EA

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By Order of the Secretary of the Army:

CARL E. VUONO

General, United States Army

Chief of Staff

Official:

R. L. DILWORTH

Brigadier General, United States Army

The Adjutant General

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Requirements for Boat, Inflatable Land-
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- 1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometers = 10 hectometers = 3,280.8 feet

Weights

- 1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = 0.35 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 110.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

- 1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

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